Amendments to the Claims:

1. **(Currently Amended)** A baseband processing method based on smart antenna and interference cancellation for a communication system including one or more antenna units linked to one or more corresponding radio frequency transceivers which are linked to a bandbased processor, where each antenna unit comprises *k* user channels, wherein *k* is a natural number, and the baseband processing method comprises ~~comprising~~ the steps of :

A. obtaining a sampled-data output signal[[s]] from ~~said~~ each antenna unit[[s]] and said corresponding radio frequency transceivers, estimating *k* user channels for each antenna unit based on said sampled-data output signal[[s]] using a predetermined user training sequence, and obtaining *k* user responses for each antenna unit from said estimated user channels;

B. ~~detecting de-spread results which are useful symbolic level signals from said sampled-data output signals by beam forming every muiltipath within a searching window length based upon said estimated user channels~~ calculating a main path and a multipath power distribution for each user channel of all antenna units within a searching window, calculating each user maximum peak value power position based on the calculated power distribution, storing the calculated peak value power position in a power point, and obtaining de-spread results of all signals at the power point with a smart antenna algorithm;

C. reconstructing the ~~useful symbolic level signals~~ de-spread results, adding a scramble code, and then obtaining a chip level reconstructed signal;

D. subtracting the reconstructed signals from said sampled-data output signals; and

E. repeating steps B to D until recovering all user signals.

2. **(Currently Amended)** The method according to claim 1, wherein ~~further~~ said user responses are stored as a matrix, which is correlated to an individual user's training sequence and is calculated and stored beforehand.

3. **(Currently Amended)** The method according to claim 1, wherein ~~step B~~ the step of calculating the main path and multipath power distribution for each user channel of all antenna units within the searching window, comprises:

estimating a power response ~~for all users on all channels~~ for each user channel of all antenna units within the searching window, calculating ~~the main path and multipath power distribution for all users within a searching window~~ a sum for the power response of all user channels, ~~generating the de-spread results by: calculating each user maximum peak value power position based on the calculated power distribution, storing the calculated peak value power position in a power point and obtaining de-spread results of all signals at the power point with a smart antenna algorithm~~ setting the calculated peak value power with 0, and not calculating the calculated peak value power position again when making the next interference cancellation.

4. **(Currently Amended)** The method according to claim [[3]] 1, further comprising sending an adjustment parameter for synchronization to a transmitting module associated with a user its most powerful path is not at the same point of other users and which is not synchronized with a base station while calculating each user's maximum peak value power position.

5. **(Currently Amended)** The method according to claim [[3]] 1, wherein step B further comprises:

estimating a signal/noise ratio for all users based on the de-spread result,

repeating steps C, D, and E for users identified as having a low signal/noise ratio; and

outputting a signal result directly for users identified as having a high signal/noise ratio.

6. **(Previously Presented)** The method according to claim 5, wherein the step of estimating a user signal/noise ratio comprises:

calculating a user power;

determining whether the calculated user power is greater than a selected threshold so as to determine whether the calculated user power is an effective power;

calculating the variance for all signals having an effective power at their corresponding constellation map point; and

identifying those users having a low signal/noise ratio when the variance is greater than a preset value, and identifying those users having a high signal/noise ratio when the variance is less than said preset value.

7. **(Previously Presented)** The method according to claim 1, wherein step C comprises reconstructing the useful symbolic level signals and calculating components of all users signal and multipaths on each antenna unit.

8. **(Original)** The method according to claim 1, wherein step D is executed using an interference cancellation module.

9. **(Previously Presented)** The method according to claim 1, wherein step E comprises repeating, until a number of interference cancellation loops reaches a preset number, which preset number is less or equal to length of a search window, at which time interference cancellation is stopped and the recovered signals are output.

10. **(Currently Amended)** The method according to claim 1, wherein step E comprises repeating, until the signal/noise ratio of all signals is greater than a predetermined threshold, at which time ~~stopping~~ interference cancellation is stopped and ~~outputting~~ the recovered signals are output.

11. **(Original)** The method according to claim 1, wherein step E comprises repeating steps B to D for at most a number of times equal to the length of searching window.

12. **(Previously Presented)** The method according to claim 1, wherein a channel estimation module estimates the user channels in step A.

13. (Currently Amended) The method according to claim [[3]] 1, wherein a power estimation module estimates the power response, the main path and multipath power distribution, and a signal generator ~~that receiving~~ receives the calculated power distribution and generates the useful symbolic level signals.

14. (Previously Presented) The method according to claim 5, wherein a signal/noise ratio estimation module that receiving the de-spread result estimates the signal/noise ratio.

15. (Previously Presented) The method according to claim 1, wherein a signal reconstructing module reconstructs the reconstructed signals.

16. (Previously Presented) The method according to claim 1, wherein step E is executed by a decision module.

17. (Currently Amended) A baseband processor based on smart antenna and interference cancellation for a communication system including one or more antenna units linked to one or more corresponding radio frequency transceivers which are linked to the bandbased processor, where each antenna unit comprises *k* user channels, wherein the baseband processor comprises[[,]]:

a channel estimation module each estimating *k* user channels for a sampled–data output signal[[s]] from the radio frequency transceiver[[s]]; and

a smart antenna interference cancellation module for receiving user responses from each channel estimation module and the sampled–data output signals from each radio frequency transceiver, repeating the follows until recovering all user signals[[:]];

~~detecting de-spread results which are useful symbolic level signals from said sampled-data output signals by beam forming every muiltpath within a searching window length based upon said estimated user channels;~~

calculating the main path and multipath power distribution for all user channels of all antenna units within the searching window; calculating each user maximum peak value power

position based on the calculated power distribution, storing the calculated peak value power position in a power point, and obtaining de-spread results of all signals at the power point with a smart antenna algorithm;

reconstructing the ~~useful symbolic level signals~~ de-spread results, adding a scramble code, and then obtaining a chip level reconstructed signal; and

subtracting the reconstructed signals from said sampled-data output signals.

18. **(Currently Amended)** The baseband processor according to claim 17, wherein the smart antenna interference cancellation module comprises[[,]]:

a power estimation module, receiving user responses from the channel estimation module, estimating a power response for [[all]] each user[[s]] channel [[on]] of all ~~channels~~ antenna units, calculating ~~the main path and multipath power distribution for all users within a searching window~~ a sum for the power response of all user channels;

a signal generator, receiving the calculated power distribution from the power estimation module, the user responses from the channel estimation module, interference cancellation results and the sampled-data output signals, calculating each user maximum peak value power position, storing the calculated peak value power position in a power point and obtaining de-spread results of all signals at the power point with a smart antenna algorithm;

a signal reconstructing module, reconstructing de-spread results from the signal generator and calculating components of all users signal and multipaths on each antenna unit to obtain a chip level reconstructed signal;

an interference cancellation module, receiving the sampled-data output signals and the reconstructed signals from the signal reconstructing module, subtracting the reconstructed signals from the sampled-data output signals to obtain the interference cancellation results sending to the signal generator; and

a decision module, determining whether a number of interference cancellation loops reaches a preset number, which preset number is less or equal to length of a search window; if so, instructing the signal generator to stop interference cancellation and output recovered signals.

19. (Currently Amended) The baseband processor according to claim 18, wherein the smart antenna interference cancellation module further comprises[[,]]:

a signal/noise ratio estimation module, estimating a signal/noise for the de-spread results from the signal generator, outputting recovered signals directly for users identified as having a high signal/noise ratio; instructing the signal generator to continue interference cancellation for users identified as having a low signal/noise ratio.

20. (Currently Amended) The baseband processor according to claim 18, wherein the power estimation module further comprises sending an adjustment parameter for synchronization to a transmitting module associated with a user its most powerful path is not at the same point of other users and which is not synchronized with a base station while calculating each user's maximum peak value power position.